The blank spaces in the columns of orbital elements emphasize the strong need for work in that direction. There can be little doubt that a comparative study of spectroscopic orbits and of spectroscopic and visual orbits would be most fruitful of results.

W. W. CAMPBELL,
HEBER D. CURTIS.

THE SPECTROGRAPHIC BINARY, Y *OPHIUCHI.*

During the summer and fall of 1905 a good series of spectrograms of the variable star Y *Ophiuchi* were obtained with the one-prism spectrograph. The plates thus far measured and reduced give a velocity-curve of double amplitude of about 20^{km} and a period coinciding with the period of light variation, which is 17.12 days. The minimum velocity seems to occur about two days after the epoch of light-maximum.

January 25, 1906. SEB. ALBRECHT.

NOTE ON THE RECENT OBSERVATIONS OF THE RADIAL VELOCITY OF *a DRACONIS.*

a	$14^h\ 1^m.7$	Type A	Vis. magn. 3.6
δ	$+64^\circ\ 51'$		Photo. magn. 4.0

a Draconis was announced as a spectroscopic binary by Director CAMPBELL and Dr. H. D. CURTIS in 1903 (*L. O. Bulletin* No. 46) from an observation of its radial velocity in 1902, and two in 1903. The first plate of June 16, 1902, gave a velocity of $\pm 0^{km}$, while the plates of April 29th and May 4th gave velocities of -43^{km} and -42^{km}, respectively. Three plates have been obtained since the above, the measures of which, made by the author, are as follows:—

Plate.	Date.	Velocity.
3272B	1904 June 19	-42^{km}
3831B	1905 June 13	-42
4152E	1906 January 4	-40

Director CAMPBELL has asked me to call attention to the fact that our recent measures agree among themselves, and with those of April 29 and May 4, 1903, so that the binary character of *a Draconis* rests upon the plate of June 16, 1902. The velocity from this plate is based upon the magnesium line 4481, which is slightly out of focus. Repeated measures by

several observers make it improbable that the velocity of $\pm$ 0^{km} is in error as much as 5^{km}. We have also taken every means at hand to assure ourselves that this plate is not that of some other star.

J. H. MOORE.

January 25, 1906.

THE SPECTROSCOPIC BINARY λ *HYDRÆ*.

α	10^h 5^m.7	Type K	Vis. magn. 3.8
δ	— 11° 51′		Photo. magn. 4.9

The binary character of λ *Hydræ* was suspected by Mr. W. H. WRIGHT from observations of its radial velocity in 1898, 1899, and 1900, and confirmed by the recent measures of Mr. K. BURNS.

The following is a list of good plates, and their measures obtained with the Mills spectrograph:—

Plate.	Date.	Velocity.	Measured by
686A	1898 March 30	23.3	WRIGHT.
1174D	1899 Feb. 13	22.9	"
1648C	1900 Feb. 2	18.6	"
1660A	Feb. 26	19.4	"
1661D	March 9	18.4	"
1675B	March 12	19.2	"
1682C	March 13	19.0	"
1694C	March 27	19.2	"
1967D	Dec. 5	15.1	BURNS.
2010D	1901 Jan. 15	17.4	REESE.
2321D	Dec. 23	21.4	"
2627C	1902 Dec. 31	24.1	BURNS.
2706D	1903 Feb. 23	22.5	"
3186A	1904 March 31	19.9	BRASCH.
		18.0	MOORE.

Unfortunately the plates are not distributed in such a manner as to give a good determination of the period.

January 25, 1906. J. H. MOORE.

ECLIPSES OF SATELLITES OF *JUPITER*.

The following eclipse phenomena of *Jupiter's* satellites were observed here with the 12-inch refractor and its 3-inch finder. The powers used were: 12-inch, 155, except in cases indicated

in column "Remarks"; 3-inch, 18.5. Dr. AITKEN kindly secured the observations of December 22d and 29th in my absence. The times recorded are the latest or earliest moment at which the satellite was certainly seen. Very few eclipse disappearances and reappearances of Satellite I, observable at Mt. Hamilton since 1905, October 15th, were missed.

Phenomenon.	Am. Eph. and N. A. Wash. M. T.	Observed Wash. M. T. 12-inch.	Observed Wash. M. T. 3-inch.	Remarks.
Ec. Dis.	1905 h m s	h m s	h m s	
I	Oct. 19, 18 38 11	Before 38 37	18 38 07	0.8 of *Jupiter's* disk occulted by cross-wires of finder.
I	21, 13 06 43	.....	13 05 58	12″, power 64; "I easily seen nearly a minute later"; time not recorded.
III	23, 12 03 00	12 05 58	12 04 34	12″, power 64.
I	26, 20 32 34	Before 32 55	20 32 00	Seeing very good. 12″, power 64.
II	27, 12 31 00	12 33 55	12 32 37	Finder, glimpsed at 49ˢ?
I	Nov. 6, 11 24 23	11 24 37	11 23 42	Poor conditions. 12″, glimpsed at 39ˢ?
III	6, 20 02 57	20 09 50	20 08 09	12″, power 64.
I	13, 13 19 06	13 19 13	13 18 48	Seeing poor. Finder time late? 12″ slightly out of focus.
I	18, 20 45 11	20 45 12	.....	Seeing poor. I not seen in finder, though observation started at 20:41.7. Ec. Dis. close to disk of planet.
I	20, 15 13 58	At or slightly before 13 55	.....	High N.W. wind, but seeing fair. Driving clock stopped. I not seen in finder. Observation started at 15:10.5. Ec. Dis. close to disk.
I	22, 9 42 38	9 42 24	.....	Seeing fair till 9:42:24 when door was opened and seeing became extremely poor. Would probably have been seen 3ˢ longer. Observation began at about 9:36. I not seen in finder, though at about 9:38, 0.8 of *Jupiter's* disk was occulted by cross-wires. Ec. Dis. very close to disk.
Ec. Re.				
I	Dec. 1, 8 15 01	.....	8 18 41	Seeing very poor after storm. Observation difficult.
I	6, 15 41 23	15 40 30	15 41 31	Seeing fairly good. 12″, time probably 2ˢ or 3ˢ late.
I	8, 10 10 17	10 09 24	10 10 18	Finder, 18ˢ? Seeing variable. Air steady at 18ˢ? Easily seen at 42ˢ.
I	22, 14 01 10	14 00 11	14 02 16	Observer. R. G. A. Poor seeing.
I	29, 15 56 45	15 55 57	15 57 09	Observer, R. G. A.
	1906			
I	Jan. 23, 10 41 55	10 42 13	10 42 47	Seeing fair. Times late? I seen with ease at times recorded.
I	30, 12 37 45	12 36 58	12 37 44	Good conditions.

January 31, 1906. JAMES D. MADDRILL.

Nova Aquilæ No. 2.

A single magnitude observation of *Nova Aquilæ,* made December 16th, completes my series for 1905. (See these *Publications,* October and December.) Further measures cannot be made here till the latter part of February.

The estimates were made with the 12-inch, power 155, by the Argelander method, at a large hour-angle ($5^h.1$) under poor atmospheric conditions. Four photometric settings on the star *f,* with the 12-inch, November 25th, gave for its magnitude 13.46.

G. M. T., 1905.	Estimates.	*Nova.*
Dec. $16^d.60$	*e* 5–6 *x* 3 *Nova* 12 *f; d* 8 *e* 8 *Nova*	$12^m.1$

The value of a step from this observation is $0^m.085$.

January 25, 1906. JAMES D. MADDRILL.

Rainfall at Mt. Hamilton.

Until the 9th of January the season beginning 1905, July, threatened to be a dry one. From January 11th to 19th, however, almost continuous rain brought the season record up from 4.93 inches to 17.23 inches. The heaviest fall

In one hour was 0.77^{in}, from 12:40 to 1:40 P. M., January 12th.

In 24 consecutive hours was 3.86^{in}, from 3 P. M., January 11th, to 3 P. M., January 12th.

Of the latter 3.39 inches fell in the last 12 hours. The next day the fall

In 24 consecutive hours was 3.83^{in}, from 6 A. M., January 13th, to 6 A. M., January 14th.

Of this 3.61 inches fell in 12 hours, from 7 A. M. to 7 P. M.

The twenty-five-year summary at the conclusion of this article shows that about 14.5 inches are to be expected by January 19th; hence we are about 2.7 inches ahead of the normal season.

A table of the rainfall by months for the first twelve years, 1880, July – 1892, June, was compiled by Mr. PERRINE in 1893 and published in these *Publications* (Vol. V, p. 126). The following table is a continuation to 1905, June; and a summary